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FLEXOGRAPHIC PRINTING
PRESS WITH INTEGRAL DRYER

Commissioner of Patents
P.O. Box 1450
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Sir:

REPLY

In response to the Office Action October 24, 2003, applicants respectfully request reconsideration of this application.

As stated on page 1 of the application, a flexographic printing press which includes a central impression (CI)) cylinder or drum conventionally includes a plurality of color stations or printing stations for printing the web on the CI drum with different colors. The advantage of using a CI drum is that the web is stable during the printing process, and stability of the web allows for higher quality printing on a variety of substances, including extensible films.

As stated on page 2 of the application, on modern presses, the ink drying or curing process causes the greatest amount of damage to the web. Between color dryers are conventionally located between each color station. The purpose

of the between color dryers is to dry the ink enough so that another layer of ink can be printed on top of the previous layer.

As stated at the bottom of page 2 and on page 3 of the application, once the last color is printed on the web, the web leaves the CI drum and enters a tunnel dryer. The tunnel dryer acts like an oven, and its purpose is to evaporate the remaining carrier from the printed web. The problem with the tunnel dryer, once the carrier has been removed, is that the heat of the dryer is absorbed into the web. If too much heat is absorbed into the web, the web temperature will exceed the thermal yield point and start distorting. Extensible films and thin films characteristically have low thermal yield temperatures.

The conventional nature of between color dryers and tunnel dryers on flexographic presses are described in the attached excerpt from "Flexography Principles and Practices," (Fourth Ed. 1991).

As described in the Summary of the Invention on page 4 of the application, the goal of the invention is to create an economical printing press that will allow the use of thin gauge, highly elastic films in the flexographic printing process. To accomplish this task, the printed ink on the web is dried before the web is removed from the CI drum. By maintaining the web on the drum throughout the entire drying process, the web will not be susceptible to the disturbances seen in present machines.

Claim 1, the only independent claim, specifically describes a flexographic printing press for printing a web with a

solvent based or water based ink, at least one between color dryer positioned between each pair of adjacent printing decks, and a downstream dryer positioned between the downstream printing deck and the downstream exit point from the central impression cylinder. The last clause of claim 1 states that no dryer is located between said exit point from the central impression cylinder and said rewind apparatus.

No prior art flexographic press has ever been constructed in the manner described by claim 1. Specifically, no flexographic printing press has included between color dyers and a downstream dryer positioned between the downstream printing deck and the downstream exit point from the central impression cylinder with no dryer being located between the exit point from the central impression cylinder and the rewind apparatus.

The Examiner has rejected claim 1 under 35 U.S.C. §103(a) as being unpatentable over George in view of Paarmann. Applicants have obtained a translation of Paarmann, which is attached.

The problem with the Examiner's rejection is that the Examiner has selected two references, each of which is directed to a different problem, and neither of which is directed to the problem solved by applicants, and has combined the two references without any suggestion or motivation in the references to make such a combination.

George is the primary reference. However, George is not concerned about drying. George simply describes a removable

print station which is mounted between the central impression cylinder and the rewinder. Just because George does not specifically address drying does not mean that George teaches that drying is not necessary. Indeed, the invention described by George is not even limited to flexographic presses with a CI drum as stated in column 2, lines 31-37.

The invention of George relates to a drop-in print station for a press, and the specification and drawings of George provide a written description of that invention which is sufficient to enable a person skilled in the art to make and use the invention. That is all that the law requires. George is not required to disclose features which are unrelated to the claimed invention and which are not required for an enabling disclosure. However, such a description should not be taken as a disclosure or teaching that no dryers are used between the print stations and that no tunnel dryer is used after the last print station.

As the attached excerpt from "Flexography Principles and Practices" demonstrates, conventional practice is to include both between color dryers and a tunnel dryer. A person of ordinary skill in the art who reads George would assume that conventional dryers are used. A teaching or disclosure of a press which specifically omits a tunnel dryer requires more in the nature of a specific disclosure regarding that omission than a simple description of an invention which is not concerned at all about drying and which describes only the invention which is claimed by the patent.

Likewise, Paarmann is concerned only with a specific type of between color dryer, and that is what is described in Paarmann. Paarmann is not concerned with the structure of the tunnel dryer and does not even describe or illustrate the right side of the press or the portion of the press between the central impression cylinder and the rewind apparatus. Paarmann's drawings illustrate only three print stations and three between color dryers. The limited disclosure of Paarmann cannot be interpreted as a specific disclosure or teaching that the flexographic press described in Paarmann omits a tunnel dryer between the exit point from the central impression cylinder and the rewind apparatus.

Taken to its logical conclusion, the Examiner's position would be that that Paarmann teaches a flexographic press without any unwinder or other means for supplying the web to the central impression cylinder, without any print stations located on the opposite side of the central impression cylinder, and without any means for rewinding the web because none of that structure is described or illustrated in Paarmann. Clearly, a person of ordinary skill in the flexographic printing art would understand that the portion of the printing press which is not described or illustrated in Paarmann would be conventional, including the use of a conventional tunnel dryer between the exit point from the central impression cylinder and the rewind apparatus.

In order to combine Paarmann with George there must be

some motivation or suggestion for making the combination. Since George is concerned with a drop-in print station and is not concerned at all about dryers, there is no suggestion in George to use anything other than conventional flexographic drying technology, i.e., between color dryers and a tunnel dryer. Paarmann is concerned only about a particular type of between color dryer and does not even describe the remainder of the flexographic press. There is no motivation, teaching, or suggestion in Paarmann of eliminating the conventional tunnel dryer between the central impression cylinder and the rewind apparatus. There is therefore no suggestion or motivation in either George, Paarmann, or the prior art in general of combining the limited disclosures of George and Paarmann to arrive at the flexographic press which is described in claim 1.

The Examiner states that Paarmann teaches a between color dryer between the downstream printing deck and a downstream exit point. However, all that Paarmann discloses is a between color dryer at about the 7 o'clock position on the central impression cylinder. Persons of ordinary skill in the art understand that additional print stations are located on the right side of the central impression cylinder, and the between color dryer at the 7 o'clock position is the between color dryer for the non-illustrated print station which would be located at about the 5 o'clock position. Paarmann does not show the exit point of the web from the central impression cylinder or the downstream printing deck which is adjacent the exit point.

Paarmann therefore does not disclose a between color dryer between the downstream printing deck and the downstream exit point.

Claim 11 describes the bottom orientation of the infeed and outfeed of the web to and from the central impression cylinder. Even though none of the references discloses such a web path, the Examiner states that it would be obvious to one having ordinary skill in the art to position the exit points in any configuration in order to accommodate the design of the facility in which the press is installed. However, such a conclusion is unsupported by any of the references. Indeed, conventional flexographic presses have top-oriented web infeed and outfeed paths precisely because of the need to route the web through a tunnel dryer as illustrated, for example, in Lovin and Mudry.

The web path described in claim 11 results in a much shorter web path between the unwind apparatus and the central impression cylinder and between the central impression cylinder and the rewind apparatus with a consequent reduction in the number of idler rolls over which the web must pass. As stated on page 3 of the application, web path plays a significant role in the amount of tension required in the system. The longer the web path, the greater the amount of idler roll friction the web needs to overcome or drive, which in turn is proportional to the amount of tension imparted on the web. The extensible films which are particularly suited for use in the invention can withstand only


minimal tension before permanent distortion occurs. Clearly, if the prior art were able to devise a way for minimizing web path by having a bottom oriented entry point to the central impression cylinder and a bottom oriented exit point from the central impression cylinder, there would be a clear disclosure of such entry and exit points in the prior art.

Claims 3 and 4 were rejected as unpatentable over George in view of Paarmann and further in view of Hauer. However, all that Hauer discloses is an air turning bar for guiding a web. Hauer is not relevant to the structure described in claim 1.

Claims 5-8 and 10 were rejected as unpatentable over George in view of Paarmann and further in view of Mudry. Mudry describes the conventional placement of between color dryers and a tunnel dryer. Mudry does not disclose completely drying the web without damaging it and while the web is still on the central impression cylinder by totally eliminating the tunnel dryer.

In view of the foregoing, reconsideration and allowance of this application is respectfully requested.

Respectfully submitted,



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